

Hepatobiliary Scanning of the Common Bile Duct Injury after Laparoscopic Cholecystectomy

Seok Kil Zeon, MD, PhD, Hee Jung Lee, MD, PhD and Won Hyun Cho, MD, PhD*

Department of Radiology, and General Surgery, School of Medicine,
Keimyung University, Daegu, Korea*

== 초 록 ==

내시경 담낭절제술에 발생한 담도손상의 간담도스캔

계명대학교 의과대학 방사선과학교실, 일반외과학교실*

전 석 길 · 이 회 정 · 조 원 현*

내시경 담낭절제술은 개복수술보다 여러가지 장점이 있어서 점차 보편화되는 경향이지만 이에 수반하는 합병증도 여러가지가 발표되고 있으며, 그 가운데 담도손상으로 인한 담즙유출은 재수술을 요한다. 저자들은 43세의 남자와 54세의 여자에서 내시경 담낭절제술후에 발생한 복강내 담즙유출을 ^{99m}Tc -DISIDA 간담도 스캔으로 확인하고 이의 유용성을 증례와 함께 보고하는 바이다.

Index : Endoscopic Cholecystectomy, Bile Duct Leakage, Hepatobiliary Scan

INTRODUCTION

Laparoscopic cholecystectomy is widely accepted as a primary management of the gallbladder diseases instead of the traditional open surgery, because of several advantages such as minimal postoperative pain, minimal puncture wounds, shorter hospital stay and lower hospital costs, and is sometimes utilized even in severely debilitated and high risk patients for those open surgery is often contraindicated^{1,2)}. And the complication rate has been reported as nearly same as the traditional open surgery by several authors, although the injury rate to the bile duct has been somewhat higher¹⁻³⁾. Although there is several diagnostic modality to detect the bile duct injury, hepatobiliary scan should

be considered as a primary non-invasive diagnostic modality when evaluating patients with suspected bile duct injury from trauma, or traditional and laparoscopic cholecystectomy. We report two cases of common bile duct injury following laparoscopic cholecystectomy, those were promptly and accurately detected by the hepatobiliary scanning with ^{99m}Tc -diisoprophyliminodiacetic acid (DISIDA).

CASE REPORT

Case 1

The laparoscopic cholecystectomy was performed in a 43-year-old male under the diagnosis of chronic cholecystitis with cholelithiasis and the immediate postoperative state was uneventful. on the fourth post-operative day, abdominal distension, diffuse abdominal pain and fever appeared. Ultrasonographic examination revealed fluid collections in the

이 논문은 1994년도 계명대학교졸업연구비 및 동산의료원조사연구비의 보조로 이루어졌음.

right paracolic gutter, right subhepatic space and pelvic cavity (Fig. 1A). Emergency hepatobiliary scan with ^{99m}Tc -DISIDA (Fig. 1B) showed subhepatic, subdiaphragmatic and paracolic free flow of

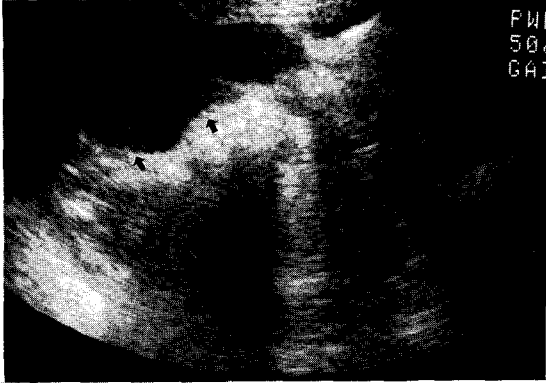


Fig. 1A. Ultrasonogram of 43-year-old man on 4 days after the laparoscopic cholecystectomy reveals a large amount of intraperitoneal free fluids in right paracolic gutter (arrows). There was also free fluids in subhepatic space and pelvic cavity (not shown). But these are non-specific findings of free fluids such as bile, hemorrhage, transudate or other exudate.

the tracer which spilled out into the abdominal cavity on position change. The laparotomy showed a common bile duct tearing which was nearly transected, and free bile leakage. Segmental resection of the teared common bile duct with end-to-end anastomosis was performed. Patient was discharged 10 days after the reoperation with uneventful post-operative course.

Case 2

54-year-old woman was referred from local clinic, because of intermittent bile leakage through the subhepatic rubber drain and persistent ascites after the laparoscopic cholecystectomy 20 days ago. Ultrasonographic examination showed unremarkable. Hepatobiliary scanning with ^{99m}Tc -DISIDA on arrival at this hospital (Fig. 2) revealed no definite small bowel radioactivity upto 120 min after the injection and extravasation of the radionuclide from common bile duct with profuse radionuclide accumulation around the liver surface. Laparotomy revealed complete transection of the common bile

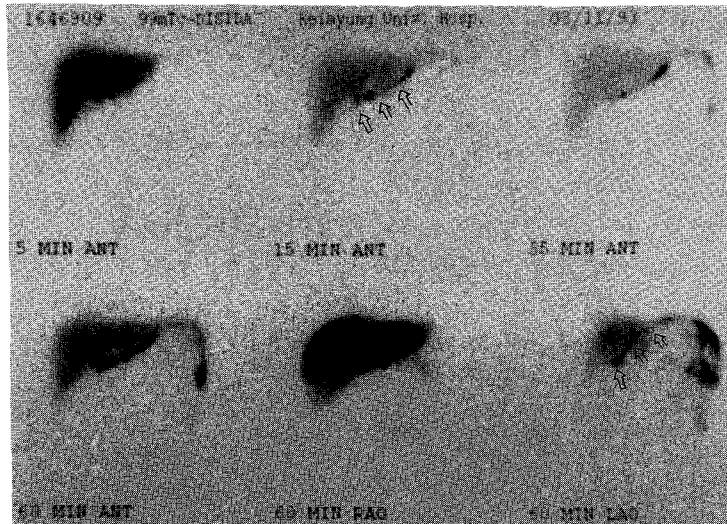


Fig. 1B. Hepatobiliary scanning with ^{99m}Tc -DISIDA reveals extravasated radionuclide along the inferior surface of left hepatic lobe (open arrow) from the common bile duct (arrow) and spilling out into the free peritoneal cavity. Open laparotomy confirmed the near transection of the common bile duct.

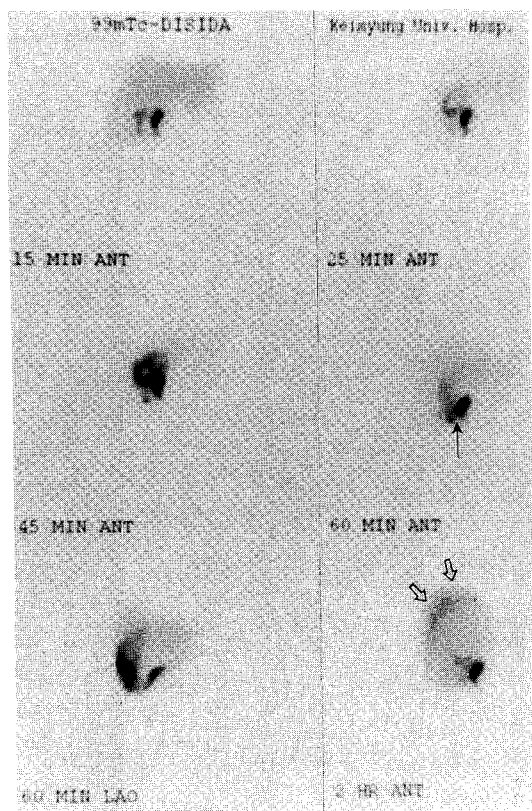


Fig. 2. Hepatobiliary scan with ^{99m}Tc -DISIDA in 54-year-old woman on 20 days after the laparoscopic cholecystectomy showed extravasation of the radioactivity from bile duct (arrow) and spillage on surface of the liver (blank arrow).

duct and free bile leakage into peritoneal cavity.

DISCUSSION

Laparoscopic cholecystectomy are now being accepted as a primary management of the gallbladder diseases instead of open laparotomy^{1,2)}. Large series of laparoscopic cholecystectomy have shown an average mortality rate of 0.05%³⁾, but slightly higher bile duct injury rates than the traditional open cholecystectomy¹⁻³⁾.

The injury to the bile duct is accompanied by the bile leakage which, if recognition is delayed, is a

very serious and real complication. The ultrasonographic study can detect intraperitoneal free fluids from the bile leakage, but does not definitely differentiate the bile from the other causes of free peritoneal fluids such as hemorrhage, exudate or transudate⁴⁾.

As seen in these cases, the free peritoneal fluid accumulations were seen on the postoperative ultrasonographic examination but definite confirmation as the bile accumulations was not made. The hepatobiliary scanning with ^{99m}Tc -labeled DISIDA or analogues can definitely demonstrate the bile leakage site⁴⁾ and could be detected the bile itself. There are some case reports of bile leakage after the laparoscopic cholecystectomies, detected by hepatobiliary scans^{5,6)}.

In conclusion, hepatobiliary scan with ^{99m}Tc -labeled DISIDA or other analogues is the test of choice in detecting the bile leakage following a laparoscopic cholecystectomy, and should be performed whenever bile leakage with persistent abdominal distension or abdominal pain after the procedure is suspected.

SUMMARY

As the laparoscopic cholecystectomy is performed more widely, complication associated with the procedure, although rare, are encountered occasionally. Injury to the bile duct occurs somewhat more frequently after the laparoscopic cholecystectomy than the open method. The bile leakage following a bile duct injury can be detected non-invasively either by ultrasonography or radionuclide hepatobiliary scan, but the former is not very specific. Hepatobiliary scan can show the bile leakage and the localization of the bile accumulation. We report two cases of the common bile duct injury following laparoscopic cholecystectomy, accurately detected by hepatobiliary scan using ^{99m}Tc -diisopropyliminodiacetic acid (DISIDA).

REFERENCES

- 1) Gadacz TR, Talamini MA: *Traditional versus laparoscopic cholecystectomy. Am J Surg 1991;161:336-338*
 - 2) Cuschier A, Dubois F, Mouiel J, et al: *The European experience with laparoscopic cholecystectomy. Am J Surg 1991;161:385-387*
 - 3) Ponsky JL: *Complications of laparoscopic cholecystectomy. Am J Surg 1991;161:393-395*
 - 4) Welissmann HS, Chun KJ, Frank M, et al: *Demonstration of traumatic bile leakage with cholescintigraphy and ultrasonography. AIR 1979;133:843-847*
 - 5) Politoske EJ: *Bile duct leakage after laparoscopic cholecystectomy diagnosed by radioisotope scanning. Clin Nucl Med 1993;18:318-320*
 - 6) Gentili A, Gilkeson RC, Adler LP: *Scintigraphic detection of bile leaks after laparoscopic cholecystectomy. Clin Nucl Med 1993;18:1-6*
-